REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

Claims 2, 3, 15-17, and 37 are pending in this application. Claims 14 and 34-36 are canceled by the present response without prejudice. Claims 14-17 were rejected under 35 U.S.C. § 112, second paragraph. Claims 2, 14, 15, 34, and 36 were rejected under 35 U.S.C. § 102(a) as anticipated by U.S. patent 5,930,019 to Suzuki et al. (herein "Suzuki"). Claim 35 was rejected under 35 U.S.C. § 102(a) as anticipated by U.S. patent 5,970,034 to Sakuma et al. (herein "Sakuma"). Claim 3 was objected to as dependent upon a rejected base claim, but was noted as allowable if rewritten in independent form to include all of the limitations of its base claim and any intervening claims. Claims 16 and 17 were noted as allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph, and to include all the limitations of their base claims and any intervening claims.

Applicants initially gratefully acknowledge the indication of the allowable subject matter of claims 3, 16, and 17.

With respect to claims 3, 16, and 17, applicants note claims 3, 16, and 17 are amended by the present response to be rewritten in independent form, to thereby recite subject matter indicated as allowable in the outstanding Office Action.

Addressing now the rejection of claims 14-17 under 35 U.S.C. § 112, second paragraph, that rejection is traversed by the present response.

Claim 14 is canceled and claim 15 is amended by the present response to clarify the language noted as unclear in the outstanding Office Action. The amendments to claim 15 is believed to address the rejections thereto under 35 U.S.C. § 112, second paragraph.

Addressing now the outstanding rejections based on Suzuki and Sakuma, those rejections are traversed by the present response.

Each of the rejected independent claims is amended by the present response to clarify the nature of the "light source". More specifically, the claims now clarify that the beams emitted from the light source are emitted from different respective light sources arranged in a main scan direction, and that the light sources are formed "in a unitary structure". The claims also clarify that the output light beams form images on a same area of a scanned surface. Such subject matter is believed to be fully supported for example in Figures 2 and 3 in the present specification.

Further, applicants respectfully submit that neither Suzuki nor Sakuma meet the limitations now clarified in the claims.

Suzuki is directed to a device that utilizes separate light sources, and further which are not arranged in a main scanning direction, and which are further not formed from a unitary structure.

In contrast to Suzuki, in the rejected claims multi-beam configurations are provided in which light sources are arranged in the main scanning direction. Further, the light sources are formed "in a unitary structure".

In Suzuki as the light sources are separately provided and are spaced apart from each other as shown in Figure 19 therein, the light beams scan over a scan surface by starting the respective scans from opposite ends. As a result in Suzuki the scan areas overlap only in a part of an entire scan area.

In such a scanning method in Suzuki, a high-speed scanning is not possible.

In contrast to Suzuki, in the rejected claims multi-beams are utilized in which the scans are in the same direction. As a result of such a structure a single scan can draw a plurality of lines at a time, thereby achieving a high-speed operation.

Moreover, the teachings in Sakuma do not overcome the deficiencies in Suzuki discussed above. Sakuma discloses utilizing an underfield so that a spot of a light beam needs to be restricted before reaching the deflection unit.

In contrast to Sakuma, in the rejected claims an overfield can be utilized, i.e. such a restriction is performed on the deflecting unit. The use of an overfield possible in the noted claims offers an advantage in that the use of a smaller size surface of a reflection unit makes it possible to increase a number of surfaces of a deflection unit, for example to increase a number of polygon surfaces in a polygon mirror.

However, the use of an overfield does provide certain disadvantages also. More particularly, since a light beam has a density distribution, the use of a light beam having a spot size larger than a deflection surface, i.e., utilizing an overfield, results in a reflected light amount varying as a light beam deviates. No such variation occurs in the case of an underfield device such as in Sakuma since the spot size is small.

However, to reduce such a potential drawback in the use of a device with an overfield as in the claimed invention, a plurality of light beams are situated in such a manner to cross each other near the deflecting surface of the deflecting unit. Thus, the claims provide a structure that can overcome a disadvantage that would otherwise result in the use of an overfield.

Such structures and recognitions of the advantages in the present invention are also neither taught nor suggested by Sakuma.

Moreover, and as noted above, the rejected claims are directed to the use of multi-beams forming images on a same of a scanned surface area, and the light beams are emitted from respective, separate light sources from the same unitary light source. The light source includes a plurality of light emitting sources arranged in a main scan direction, and the light emitting sources are integrated into a unitary structure. As a result a rotation of an entire

structure around a light emitting axis provides an adjustment of beam pitches to achieve scan-line intervals corresponding to recording density.

With such a provision in the device as set forth in the rejected claims as currently written, the rotation of the light source around the optical axis makes it possible to set sub-scan pitches on the scan surface, and beams are crossed in proximity to the deflection surface. Thereby, rotation from a change of spot positions on a deflection surface can be prevented, i.e., the position of the beam spots passing through the light beam restricting unit is not changed.

Moreover, the overfield can be used with a multi-beam configuration of the present invention. That makes it possible to reduce the radius of the deflection means, which reduces the load of the motor for rotating the deflection means, thereby achieving an increased rotation speed. A multi-beam scan apparatus can thus achieve further enhancement in speed and density.

Such benefits achievable by the claimed invention are also believed to be neither taught nor suggested by Suzuki and further in view of Sakuma.

In such ways, applicants respectfully submit that each of the claims clearly distinguishes over the newly cited applied art to Suzuki and Sakuma.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested that this case be passed to issue.

Respectfully submitted,

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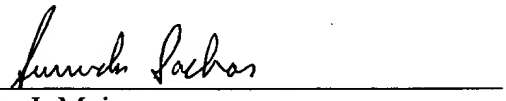

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